BioMap and Living Waters

Guiding Land Conservation for Biodiversity in Massachusetts

Core Habitats of Brewster

This report and associated map provide information about important sites for biodiversity conservation in your area.

This information is intended for conservation planning, and is not intended for use in state regulations.

Produced by:

Natural Heritage & Endangered Species Program
Massachusetts Division of Fisheries and Wildlife
Executive Office of Environmental Affairs
Commonwealth of Massachusetts

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BioMap and Living Waters:
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* Depending on the location of Core Habitats, your city or town may not have all of these sections.

Spring Salamander
(Gyrinophilus porphyriticus)
Species of Special Concern

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For more information on rare species and natural communities, please see our fact sheets online at ***www.nhesp.org***

BioMap and Living Waters:
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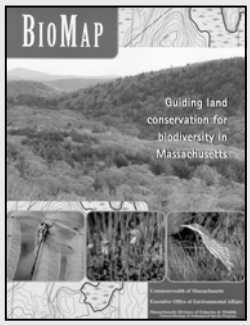
Introduction

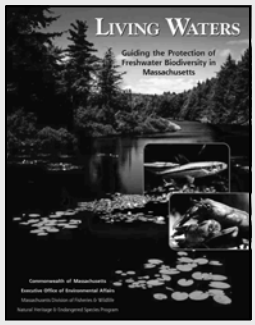
In this report, the Natural Heritage & Endangered Species Program provides you with site-specific biodiversity information for your area. Protecting our biodiversity today will help ensure the full variety of species and natural communities that comprise our native flora and fauna will persist for generatons to come.

The information in this report is the result of two statewide biodiversity conservation planning projects, ***BioMap*** and ***Living Waters***. The goal of the BioMap project, completed in 2001, was to identify and delineate the most important areas for the long-term viability of terrestrial, wetland, and estuarine elements of biodiversity in Massachusetts. The goal of the Living Waters project, completed in 2003, was to identify and delineate the rivers, streams, lakes, and ponds that are important for freshwater biodiversity in the Commonwealth. These two conservation plans are based on documented observations of rare species, natural communities, and exemplary habitats.

What is a Core Habitat?

Both BioMap and Living Waters delineate ***Core Habitats*** that identify the most critical sites for biodiversity conservation across the state. Core Habitats represent habitat for the state's most viable rare plant and animal populations and include exemplary natural communities and aquatic habitats. Core Habitats represent a wide diversity of rare species and natural communities (see Table 1), and these areas are also thought to contain virtually all of the other described species in Massachusetts. Statewide, BioMap Core Habitats encompass 1,380,000 acres of uplands and wetlands, and Living Waters identifies 429 Core Habitats in rivers, streams, lakes, and ponds.





Get your copy of the ***BioMap*** and ***Living Waters*** reports! Contact Natural Heritage at 508-792-7270, Ext. 200 or email natural.heritage@state.ma.us. Posters and detailed technical reports are also available.

Core Habitats and Land Conservation

One of the most effective ways to protect biodiversity for future generations is to protect Core Habitats from adverse human impacts through land conservation. For Living Waters Core Habitats, protection efforts should focus on the ***riparian areas***, the areas of land adjacent to water bodies. A naturally vegetated buffer that extends 330 feet (100 meters) from the water's edge helps to maintain cooler water temperature and to maintain the nutrients, energy, and natural flow of water needed by freshwater species.

In Support of Core Habitats

To further ensure the protection of Core Habitats and Massachusetts' biodiversity in the long-term, the BioMap and Living Waters projects identify two additional areas that help support Core Habitats.

In BioMap, areas shown as ***Supporting Natural Landscape*** provide buffers around the Core Habitats, connectivity between Core Habitats, sufficient space for ecosystems to function, and contiguous undeveloped habitat for common species. Supporting Natural Landscape was

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generated using a Geographic Information Systems (GIS) model, and its exact boundaries are less important than the general areas that it identifies. Supporting Natural Landscape represents potential land protection priorities once Core Habitat protection has been addressed.

In Living Waters, ***Critical Supporting Watersheds*** highlight the immediate portion of the watershed that sustains, or possibly degrades, each freshwater Core Habitat. These areas were also identified using a GIS model. Critical Supporting Watersheds represent developed and undeveloped lands, and can be quite large. Critical Supporting Watersheds can be helpful in land-use planning, and while they are not shown on these maps, they can be viewed in the Living Waters report or downloaded from www.mass.gov/mgis.

Understanding Core Habitat Species, Community, and Habitat Lists

What's in the List?

Included in this report is a list of the species, natural communities, and/or aquatic habitats for each Core Habitat in your city or town. The lists are organized by Core Habitat number.

For the larger Core Habitats that span more than one town, the species and community lists refer to the entire Core Habitat, not just the portion that falls within your city or town. For a list of all the state-listed rare species within your city or town's boundary, whether or not they are in Core Habitat, please see the town rare species lists available at www.nhesp.org.

The list of species and communities within a Core Habitat contains only the species and natural communities that were explicitly included in a given BioMap or Living Waters Core Habitat. Other rare species or examples of other natural communities may fall within the Core Habitat, but for various reasons are not included in the list. For instance, there are a few rare species that are omitted from the list or summary because of their particular sensitivity to the threat of collection. Likewise, the content of many very small Core Habitats are not described in this report or list, often because they contain a single location of a rare plant

Table 1. The number of rare species and types of natural communities explicitly included in the BioMap and Living Waters conservation plans, relative to the total number of native species statewide.

BioMap		
	Species and Verified Natural Community Types	
Biodiversity Group	**Included in BioMap**	**Total Statewide**
Vascular Plants	246	1,538
Birds	21	221 breeding species
Reptiles	11	25
Amphibians	6	21
Mammals	4	85
Moths and Butterflies	52	An estimated 2,500 to 3,000
Damselflies and Dragonflies	25	An estimated 165
Beetles	10	An estimated 2,500 to 4,000
Natural Communities	92	> 105 community types
Living Waters		
	Species	
Biodiversity Group	**Included in Living Waters**	**Total Statewide**
Aquatic Vascular Plants	23	114
Fishes	11	57
Mussels	7	12
Aquatic Invertebrates	23	An estimated > 2500

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species. Some Core Habitats were created for suites of common species, such as forest birds, which are particularly threatened by habitat fragmentation. In these cases, the individual common species are not listed.

What does 'Status' mean?

The Division of Fisheries and Wildlife determines a status category for each rare species listed under the Massachusetts Endangered Species Act, M.G.L. c.131A, and its implementing regulations, 321 CMR 10.00. Rare species are categorized as Endangered, Threatened, or of Special Concern according to the following:

- ***Endangered*** species are in danger of extinction throughout all or a significant portion of their range or are in danger of extirpation from Massachusetts.
- ***Threatened*** species are likely to become Endangered in Massachusetts in the foreseeable future throughout all or a significant portion of their range.
- ***Special Concern*** species have suffered a decline that could threaten the species if allowed to continue unchecked or occur in such small numbers or with such restricted distribution or specialized habitat requirements that they could easily become Threatened in Massachusetts.

In addition, the Natural Heritage & Endangered Species Program maintains an unofficial ***watch list*** of plants that are tracked due to potential conservation interest or concern, but are not regulated under the Massachusetts Endangered Species Act or other laws or regulations. Likewise, described natural communities are not regulated any laws or regulations, but they can help to identify ecologically important areas that are worthy of protection. The status of natural communities reflects the documented number and acreages of each community type in the state:

- ***Critically Imperiled*** communities typically have 5 or fewer documented sites or have very few remaining acres in the state.
- ***Imperiled*** communities typically have 6-20 sites or few remaining acres in the state.
- ***Vulnerable*** communities typically have 21-100 sites or limited acreage across the state.
- ***Secure*** communities typically have over 100 sites or abundant acreage across the state; however excellent examples are identified as Core Habitat to ensure continued protection.

Legal Protection of Biodiversity

BioMap and Living Waters present a powerful vision of what Massachusetts would look like with full protection of the land that supports most of our biodiversity. To create this vision, some populations of state-listed rare species were deemed more likely to survive over the long-term than others.

Regardless of their potential viability, all sites of state-listed species have full legal protection under the Massachusetts Endangered Species Act (M.G.L. c.131A) and its implementing regulations (321 CMR 10.00). Habitat of state-listed wildlife is also protected under the Wetlands Protection Act Regulations (310 CMR 10.37 and 10.59). The ***Massachusetts Natural Heritage Atlas*** shows **Priority Habitats**, which are used for regulation under the Massachusetts Endangered Species Act and Massachusetts Environmental Policy Act (M.G.L. c.30) and **Estimated Habitats**, which are used for regulation of rare wildlife habitat under the Wetlands Protection Act. For more information on rare species regulations, see the *Massachusetts Natural Heritage Atlas*, available from the Natural Heritage & Endangered Species Program in book and CD formats.

BioMap and Living Waters are conservation planning tools and do not, in any way, supplant the Estimated and Priority Habitat Maps which have regulatory significance. Unless and until the combined BioMap and Living Waters vision is fully realized, we must continue to protect all populations of our state-listed species and their habitats through environmental regulation.

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Understanding Core Habitat Summaries

Following the BioMap and Living Waters Core Habitat species and community lists, there is a descriptive summary of each Core Habitat that occurs in your city or town. This summary highlights some of the outstanding characteristics of each Core Habitat, and will help you learn more about your city or town's biodiversity. You can find out more information about many of these species and natural communities by looking at specific ***fact sheets*** at www.nhesp.org.

Next Steps

BioMap and Living Waters were created in part to help cities and towns prioritize their land protection efforts. While there are many reasons to conserve land – drinking water protection, recreation, agriculture, aesthetics, and others – BioMap and Living Waters Core Habitats are especially helpful to municipalities seeking to protect the rare species, natural communities, and overall biodiversity within their boundaries. Please use this report and map along with the rare species and community fact sheets to appreciate and understand the biological treasures in your city or town.

Protecting Larger Core Habitats

Core Habitats vary considerably in size. For example, the average BioMap Core Habitat is 800 acres, but Core Habitats can range from less than 10 acres to greater than 100,000 acres. These larger areas reflect the amount of land needed by some animal species for breeding, feeding, nesting, overwintering, and long-term survival. Protecting areas of this size can be very challenging, and requires developing partnerships with neighboring towns.

Prioritizing the protection of certain areas within larger Core Habitats can be accomplished through further consultation with Natural Heritage Program biologists, and through additional field research to identify the most important areas of the Core Habitat.

Additional Information

If you have any questions about this report, or if you need help protecting land for biodiversity in your community, the Natural Heritage & Endangered Species Program staff looks forward to working with you.

Contact the Natural Heritage & Endangered Species Program:

by Phone *508-792-7270, Ext. 200*

by Fax: *508-792-7821*

by Email: *natural.heritage@state.ma.us*.

by Mail: *North Drive*
Westborough, MA 01581

The GIS datalayers of BioMap and Living Waters Core Habitats are available for download from MassGIS: www.mass.gov/mgis

Check out www.nhesp.org for information on:

- Rare species in your town
- Rare species fact sheets
- BioMap and Living Waters projects
- Natural Heritage publications, including:
  - Field guides
  - Natural Heritage Atlas, and more!

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BioMap: Species and Natural Communities

Brewster

Core Habitat BM1226

Natural Communities

Common Name	Scientific Name	Status
Marine Intertidal: Flats		Secure

Plants

Common Name	Scientific Name	Status
Brackish Bulrush	*Scirpus cylindricus*	Watch Listed
Mitchell's Awned Sedge	*Carex mitchelliana*	Watch Listed
Oysterleaf	*Mertensia maritima*	Endangered
Seabeach Dock	*Rumex pallidus*	Threatened

Vertebrates

Common Name	Scientific Name	Status
Diamondback Terrapin	*Malaclemys terrapin*	Threatened

Core Habitat BM1241

Natural Communities

Common Name	Scientific Name	Status
Estuarine Intertidal: Saline/Brackish Flats		Vulnerable
Marine Intertidal: Flats		Secure
Maritime Beach Strand Community		Vulnerable
Maritime Dune Community		Imperiled

Plants

Common Name	Scientific Name	Status
American Sea-Blite	*Suaeda calceoliformis*	Special Concern
Oysterleaf	*Mertensia maritima*	Endangered

Invertebrates

Common Name	Scientific Name	Status
Coastal Heathland Cutworm	*Abagrotis nefascia benjamini*	Special Concern

Vertebrates

Common Name	Scientific Name	Status
Arctic Tern	*Sterna paradisaea*	Special Concern
Common Moorhen	*Gallinula chloropus*	Special Concern
Common Tern	*Sterna hirundo*	Special Concern
Diamondback Terrapin	*Malaclemys terrapin*	Threatened
Least Tern	*Sterna antillarum*	Special Concern
Northern Harrier	*Circus cyaneus*	Threatened
Pied-Billed Grebe	*Podilymbus podiceps*	Endangered
Piping Plover	*Charadrius melodus*	Threatened
Roseate Tern	*Sterna dougallii*	Endangered
Short-eared Owl	*Asio flammeus*	Endangered

Core Habitat BM1243

Plants

Common Name	Scientific Name	Status
Small Site for Rare Plant		

Core Habitat BM1245

Natural Communities

Common Name	Scientific Name	Status
Coastal Plain Pondshore		Imperiled

Plants

Common Name	Scientific Name	Status
Maryland Meadow Beauty	*Rhexia mariana*	Endangered
Plymouth Gentian	*Sabatia kennedyana*	Special Concern

Pondshore Knotweed	*Polygonum puritanorum*	Special Concern
Purple Milkweed	*Asclepias purpurascens*	Endangered
Redroot	*Lachnanthes caroliana*	Special Concern
Terete Arrowhead	*Sagittaria teres*	Special Concern
Two-Flowered Rush	*Juncus biflorus*	Watch Listed

Invertebrates

Common Name	Scientific Name	Status
New England Bluet	*Enallagma laterale*	Special Concern
Pine Barrens Bluet	*Enallagma recurvatum*	Threatened
Water-Willow Stem Borer	*Papaipema sulphurata*	Threatened

Vertebrates

Common Name	Scientific Name	Status
Bird Migration Habitat		----------
Eastern Box Turtle	*Terrapene carolina*	Special Concern

Core Habitat BM1247

Natural Communities

Common Name	Scientific Name	Status
Coastal Plain Pondshore		Imperiled

Plants

Common Name	Scientific Name	Status
Small Site for Rare Plant		

Core Habitat BM1249

Natural Communities

Common Name	Scientific Name	Status
Coastal Plain Pondshore		Imperiled

Plants

Common Name	Scientific Name	Status
Bushy Rockrose	*Helianthemum dumosum*	Special Concern
Maryland Meadow Beauty	*Rhexia mariana*	Endangered
Plymouth Gentian	*Sabatia kennedyana*	Special Concern
Terete Arrowhead	*Sagittaria teres*	Special Concern
Two-Flowered Rush	*Juncus biflorus*	Watch Listed

Invertebrates

Common Name	Scientific Name	Status
New England Bluet	*Enallagma laterale*	Special Concern

Core Habitat BM1251

Plants

Common Name	Scientific Name	Status
Small Site for Rare Plant		

Core Habitat BM1256

Plants

Common Name	Scientific Name	Status
Salt Reedgrass	*Spartina cynosuroides*	Threatened

Invertebrates

Common Name	Scientific Name	Status
Coastal Heathland Cutworm	*Abagrotis nefascia benjamini*	Special Concern
Straight-lined Mallow moth	*Bagisara rectifascia*	Special Concern

Vertebrates

Common Name	Scientific Name	Status
Piping Plover	*Charadrius melodus*	Threatened

Core Habitat BM1257

Plants

Common Name	Scientific Name	Status
Small Site for Rare Plant		

Core Habitat BM1265

Natural Communities

Common Name	Scientific Name	Status
Coastal Plain Pondshore		Imperiled

Plants

Common Name	Scientific Name	Status
Commons's Panic-Grass	*Dichanthelium ovale ssp. pseudopubescens*	Special Concern
Pondshore Knotweed	*Polygonum puritanorum*	Special Concern

Invertebrates

Common Name	Scientific Name	Status
New England Bluet	*Enallagma laterale*	Special Concern
Pine Barrens Bluet	*Enallagma recurvatum*	Threatened
Spatterdock Darner	*Aeshna mutata*	Special Concern
Water-Willow Stem Borer	*Papaipema sulphurata*	Threatened

Vertebrates

Common Name	Scientific Name	Status
Eastern Box Turtle	*Terrapene carolina*	Special Concern
Northern Parula	*Parula americana*	Threatened
Spotted Turtle	*Clemmys guttata*	Special Concern

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Core Habitat BM1271

Natural Communities

Common Name	Scientific Name	Status
Coastal Plain Pondshore		Imperiled

Core Habitat BM1279

Plants

Common Name	Scientific Name	Status
Small Site for Rare Plant		

Core Habitat BM1281

Plants

Common Name	Scientific Name	Status
Small Site for Rare Plant		

Core Habitat BM1284

Natural Communities

Common Name	Scientific Name	Status
Coastal Plain Pondshore		Imperiled

Plants

Common Name	Scientific Name	Status
Plymouth Gentian	*Sabatia kennedyana*	Special Concern
Redroot	*Lachnanthes caroliana*	Special Concern

Core Habitat BM1287

Plants

Common Name	Scientific Name	Status
Small Site for Rare Plant		

Core Habitat BM1288

Natural Communities

Common Name	Scientific Name	Status
Coastal Plain Pondshore		Imperiled

Plants

Common Name	Scientific Name	Status
Long-Beaked Bald-Sedge	*Rhynchospora scirpoides*	Special Concern
Plymouth Gentian	*Sabatia kennedyana*	Special Concern
Redroot	*Lachnanthes caroliana*	Special Concern
Terete Arrowhead	*Sagittaria teres*	Special Concern
Wright's Panic-grass	*Dichanthelium wrightianum*	Special Concern

Invertebrates

Common Name	Scientific Name	Status
Comet Darner	*Anax longipes*	Special Concern
New England Bluet	*Enallagma laterale*	Special Concern
Pine Barrens Bluet	*Enallagma recurvatum*	Threatened

Core Habitat BM1299

Plants

Common Name	Scientific Name	Status
Small Site for Rare Plant		

Core Habitat BM1304

Plants

Common Name	Scientific Name	Status
Small Site for Rare Plant		

BioMap: Core Habitat Summaries

Brewster

Core Habitat BM1226

This Core Habitat contains a large, impressive Marine Intertidal Flat community in Brewster, Orleans, and Eastham. This area is surrounded by high-quality estuarine communities that support rare seaside plants. The diversity of salt marshes, tidal creeks, and sandy uplands also support Diamondback Terrapins. Conservation of additional Diamondback Terrapin habitat is needed to help protect this species here.

Natural Communities

This Core Habitat contains a large, impressive Marine Intertidal Flat with some species of particular interest, including Brant, horseshoe crabs, and Diamondback Terrapins. The Marine Intertidal Flat community is found in areas protected from intense wave action. Although many flats have little to no vegetation, they are physically and biologically linked to other coastal marine systems. The majority of surrounding land here is occupied by high-quality estuarine communities including Salt Marshes, Eel Grass Beds, and Barrier Beaches.

Plants

Rare plant species adapted to seaside habitats, such as Seabeach Dock and Oysterleaf, are found within this Core Habitat.

Vertebrates

This Core Habitat surrounding the Namskaket/Herring River Marsh contains widespread salt marsh, extensive tidal creeks, beaches, and sandy uplands that support Diamondback Terrapins. At least three nesting sites in sandy uplands have been confirmed. Portions of the marshes, tidal creeks and uplands are protected for conservation, and protection of other suitable habitat is needed. Potential threats to this species include collisions with vehicles and degradation of foraging and nesting habitat.

BioMap: Core Habitat Summaries

Brewster

Core Habitat BM1241

South Beach and South Monomoy Islands provide the most important breeding sites in the state for Piping Plovers, and South Monomoy Island also supports the state's largest Common Tern, Laughing Gull, Herring Gull, and Great Black-backed Gull colonies. The beaches and extensive sandflats and mudflats at North and South Monomoy Islands and South Beach Island collectively represent one of the most important shorebird migration stopover areas in New England. In addition, this Core Habitat encompasses large, high-quality natural communities, including Estuarine Intertidal Flats, Maritime Beach Strands, and Maritime Dune systems. These areas provide significant habitat for several rare moth species, two rare plant species, as well as Diamondback Terrapins. The Core Habitat encompasses Nauset Beach, South Beach, North and South Monomoy Islands, Sampson Island, Hog Island, Tern Island, Strong Island, Sipson Meadow, Sipson Island, Little Sipson Island, Pleasant Bay, Little Pleasant Bay (and associated inlets), and Chatham Harbor. Given their constantly changing configurations, the current extents of the beaches, especially South Beach Island, may not be reflected precisely in the Core Habitat.

Natural Communities

This long Core Habitat includes an exemplary barrier beach system. It includes five miles of good-quality Maritime Beach Strand with minimal disturbances located on the ocean side of a high-quality 2000-acre Maritime Dune system with natural vegetation, limited access, and no vehicle damage. Maritime Beach Strand communities are sparsely vegetated, narrow, wrack-strewn areas between the line of high tide and the foredunes. They are usually part of barrier beach systems and are found seaward of any dunes, but above daily high tides. Meanwhile, the Maritime Dune community consists of patches of herbaceous plants interspersed with areas of bare sand and shrubs. It occurs on windswept dunes within the salt spray zone, and often grades into shrubland or woodlands on more sheltered back dunes. Also included in this Core Habitat are the Estuarine Intertidal Saline/Brackish Flats along the shores of Monomoy Island. These flats are well-buffered within a complex of estuarine communities and are a rich area for migratory shorebirds and horseshoe crabs.

Plants

Two rare sea-beach plants, American Sea-Blite and Oysterleaf, are found within beach strand communities along the shores of Monomoy Island.

Invertebrates

This Core Habitat includes Monomoy Island (part of the Monomoy National Wildlife Refuge), which is protected coastal sandplain habitat for rare moths such as the Coastal Heathland Cutworm. It is likely that Monomoy Island is inhabited by additional rare coastal moth species, such as the Dune Noctuid moth, the Drunk Apamea moth, and other species.

BioMap: Core Habitat Summaries

Brewster

Vertebrates

Barrier beaches and islands within this Core Habitat support several species of breeding coastal waterbirds and raptors, including: Piping Plovers, Least Terns, Common Terns, Roseate Terns, Black-crowned Night-Herons, Glossy Ibises, Snowy Egrets, Laughing Gulls, Herring Gulls, Great Black-backed Gulls, and, in some years, Black Skimmers, Arctic Terns, Short-eared Owls, and Northern Harriers. South Beach and South Monomoy Islands are notable as two of the most important breeding sites in the state for the Piping Plover. South Monomoy Island also supports the state's largest Common Tern, Laughing Gull, Herring Gull, and Great Black-backed Gull colonies, and is among the most important breeding sites for Black-crowned Night-Herons and Snowy Egrets. Potential threats to these coastal waterbird and raptor species include predation, human disturbance (including dogs), off-road vehicles, and habitat degradation caused by dune-building activities. Annual protection from these threats is needed.

The beaches and extensive sandflats and mudflats at North and South Monomoy Islands as well as South Beach Island collectively represent one of the most important shorebird migration stopover areas in New England. Uncommon species of marsh birds and waterfowl, including Pied-billed Grebe, Common Moorhen, and Gadwall, occasionally nest in wetlands on South Monomoy Island.

This Core Habitat also contains salt marsh, tidal creeks, beaches, dune areas, shallow waters, and sandy uplands that support Diamondback Terrapins. Thirty documented observations of nesting are known from the late 1970s and early 1980s. The land along the upper reaches of the bay is relatively undeveloped, but in areas of development, potential threats to this species include mortality caused by vehicles and degradation of foraging and nesting habitat.

BioMap: Core Habitat Summaries

Brewster

Core Habitat BM1245

This Core Habitat encompasses several clusters of Coastal Plain Ponds and wetlands that support rare damselflies, such as the New England Bluet and Pine Barrens Bluet, as well as the Water-willow Stem Borer moth. The pondshores here also support several populations of the beautiful and globally rare Plymouth Gentian. The Core Habitat's Pine-Oak woodlands provide habitat for a variety of birds, and the area may represent the best opportunity to protect the Eastern Box Turtle on Cape Cod. Much of this Core Habitat is protected within the Nickerson State Park, but further conservation of the remaining unprotected lands would help protect one of the largest areas of relatively unfragmented upland habitat remaining in the mid-Cape region.

Natural Communities

This Core Habitat includes several clusters of Coastal Plain Pondshore communities that have associated state-listed plant and animal species. Coastal Plain Pondshores are globally rare herbaceous communities of exposed pondshores with a distinct Coastal Plain flora. Water levels change with the water table, typically leaving an exposed shoreline in late summer where many rare species grow. Here one cluster is completely buffered by a natural landscape that has roads but little development. Another cluster is partially buffered by a natural landscape. Because there are multiple high-quality ponds in this Core Habitat, the habitat and long-term viability of the component species are greatly enhanced. However, most of the ponds in the cluster are within the zone of groundwater contribution to public water supply wells, which can contribute to lowering of pond levels. If water withdrawals are managed to mimic natural fluctuations, the impact on the natural community is lessened.

Plants

Two very high-quality populations and several smaller populations of the globally rare Plymouth Gentian occur along shores within this Core Habitat, as does a large, healthy population of Maryland Meadow Beauty.

Invertebrates

Wetlands within this Core Habitat such as Cliff Pond and the numerous small ponds peripheral to it, as well as Smalls, Mill, and Cahoon Ponds to the southwest, all provide habitat for rare damselflies such as the New England Bluet and the Pine Barrens Bluet, as well as for the Water-willow Stem Borer moth. All of these ponds are located within a large area of undeveloped and unfragmented landscape, allowing for unimpeded dispersal of rare damselflies, Water-willow Stem Borer moths, and other species.

Vertebrates

This large and relatively unfragmented Core Habitat contains significant habitat for Eastern Box Turtles, and may be one of the best places to preserve viable populations of this species on Cape Cod. This is also an important block of habitat for woodland and shrubland birds characteristic of Cape Cod, including the Eastern Towhee, one of the fastest declining songbirds in eastern North America. Given its location near the "elbow" of Cape Cod, this area provides important migration habitat for many species of landbirds.

BioMap: Core Habitat Summaries

Brewster

Core Habitat BM1247

Natural Communities

This small Core Habitat contains a Coastal Plain Pondshore community that is part of a cluster of ponds associated with state-listed plant species. Coastal Plain Pondshores are globally rare herbaceous communities of exposed pondshores with a distinct Coastal Plain flora. Water levels change with the water table, typically leaving an exposed shoreline in late summer where many rare species grow. A small portion of the shoreline here is buffered by a natural landscape; the rest is surrounded by residential development. The area is not in a zone of groundwater contribution to public water supplies, and there are no adjacent cranberry bogs. The viability of the characteristic Coastal Plain Pond species is lessened by the clearing of the pondshore for recreation, but enhanced by the presence of nearby ponds and wetlands and the lack of large-scale water withdrawal.

Core Habitat BM1249

Natural Communities

This small cluster of Coastal Plain Pondshore communities of moderate quality is partially buffered by naturally vegetated land. Coastal Plain Pondshores are globally rare herbaceous communities of exposed pondshores with a distinct Coastal Plain flora. Water levels change with the water table, typically leaving an exposed shoreline in late summer where many rare species grow. Here the pond is separated from other pond clusters by residential development and an adjacent golf course. The multiple ponds in the area enhance the viability of the characteristic Coastal Plain Pond species, but development in the area may stress the habitat.

Plants

Three rare plant Species of Special Concern are found within this Core Habitat: Bushy Rockrose, Plymouth Gentian, and Terete Arrowhead. These plants are adapted to grow along the shores of Coastal Plain ponds.

Invertebrates

This Core Habitat includes Blueberry Pond, Salls Pond, and Widger Hole, all of which are habitat for the rare New England Bluet damselfly. Though surrounded by development, this Core Habitat is located less than 5 km from the population of the New England Bluet at Cliff Pond in Brewster, which may allow for dispersal of individuals between these two locations. Apparently only a very small fraction of this Core Habitat is protected.

BioMap: Core Habitat Summaries

Brewster

Core Habitat BM1256

This Core Habitat, centered on Quivett Creek, contains a variety of habitats for rare plants and animals. It includes beaches that support breeding Piping Plovers, marshes that provide habitat for the Salt Reedgrass and rare moth species, as well as maritime habitats that support the Coastal Heathland Cutworm moth.

Plants

Two large, vigorous populations of Salt Reedgrass, a relative of the more common cordgrasses, are found within marshes of this coastal Core Habitat.

Invertebrates

Rare moth species occurring within this Core Habitat include the Coastal Heathland Cutworm, which inhabits the dunegrass grasslands and maritime shrublands, and the Straight-lined Mallow moth, which inhabits the marsh. It is likely that this Core Habitat supports additional rare coastal moth species, such as the Spartina Borer moth.

Vertebrates

The beaches of Quivett Neck and Coles Pond support breeding Piping Plovers. Potential threats to nesting coastal waterbirds include habitat alteration and loss, human disturbance, and predation. Annual protection from these threats is needed.

Core Habitat BM1265

This Core Habitat, spanning Brewster and Harwich, is one of the largest areas of unfragmented upland habitat remaining in this area of Cape Cod. It provides significant habitat for Eastern Box Turtles and important breeding habitat for birds that are characteristic of the region. The many Coastal Plain Pondshores and wetlands also provide habitat for rare species of damselflies, dragonflies, moths, and plants. With half of the Core Habitat protected as municipal watershed land, conservation of the remaining unprotected lands would help ensure the long-term viability of the rare species found here.

Natural Communities

This Core Habitat contains a Coastal Plain Pondshore community of moderate quality in Brewster. Coastal Plain Pondshores are globally rare herbaceous communities of exposed pondshores with a distinct Coastal Plain flora. Water levels change with the water table, typically leaving an exposed shoreline in late summer where many rare species grow. Recreational use of this pond has reduced the extent of pondshore vegetation. This pond may also be at risk from the effects of adjacent cranberry bogs and three nearby public water supply wells.

Plants

Commons's Panic-grass (Species of Special Concern) is scattered along dry cart paths and small clearings in this area.

Invertebrates

Coastal Plain Pondshores within this Core Habitat, including Lower Millpond, Upper Millpond, Walkers, Seymour, Hinckleys, Smith, Elbow, and Robbins Ponds, as well as numerous smaller kettlehole ponds and shallow, swampy wetlands, all provide habitat for rare dragonflies and damselflies including the Spatterdock Darner, the New England Bluet, and the Pine Barrens Bluet, as well as the Water-willow Stem Borer moth. All of these ponds are located within a large area of relatively undeveloped and unfragmented landscape, allowing for unimpeded dispersal of these and other invertebrate species.

Vertebrates

This Core Habitat comprises upland forest and small, scattered wetlands, ponds, and cranberry bogs. It contains significant habitat for Eastern Box Turtles and likely Spotted Turtles as well. Northern Parula warblers have also been noted in the area. The relative size of this Core Habitat in the increasingly developed mid-Cape area makes it important habitat for birds that breed in the pine-oak woodlands and barrens characteristic of Cape Cod.

Core Habitat BM1271

Natural Communities

This Core Habitat contains a Coastal Plain Pondshore community of moderate quality that is partially buffered by natural vegetation. Coastal Plain Pondshores are globally rare herbaceous communities of exposed pondshores with a distinct Coastal Plain flora. Water levels change with the water table, typically leaving an exposed shoreline in late summer where many rare species grow. Here the shore is used for swimming and other kinds of recreation, which have a detrimental impact on the plants and reduce the amount of habitat present. The fluctuation of the pond water levels is affected by its use as a cranberry bog reservoir. There are nearby water supply wells that may affect water levels in the pond during times of high demand. These artificial water fluctuations can have detrimental impacts on the rare plants and the natural community.

Core Habitat BM1284

Natural Communities

This Core Habitat includes a cluster of several Coastal Plain Pondshore communities that have partially undeveloped shorelines. They support many of the species that specialize in inhabiting peaty, sandy Coastal Plain pondshores. There are no cranberry bogs in the vicinity. They are within the areas of groundwater contribution to a public water supply well; during periods of high water demand, groundwater in these areas is lowered, reducing the water levels of nearby ponds. Repeated and excessive artificial lowering of the pond levels threatens the habitat of species dependent on Coastal Plain Ponds.

Plants

Two plant Species of Special Concern, Redroot and Plymouth Gentian, are found along pondshores in this Core Habitat.

BioMap: Core Habitat Summaries

Brewster

Core Habitat BM1288

This Core Habitat in Dennis and Brewster contains a cluster of high-quality Coastal Plain Ponds, a globally rare type of natural community. These pondshore habitats and the surrounding forests support several rare species of plants, damselflies, and dragonflies. While part of this Core Habitat is on protected municipal watershed land, conservation of the remaining unprotected lands will help ensure the long-term viability of rare species inhabiting the area.

Natural Communities

This Core Habitat contains a cluster of Coastal Plain Pondshore communities that are in excellent condition and partially to well-buffered by surrounding natural vegetation; however, their hydrology may be affected by their proximity to two zones of groundwater contribution to public water supply wells. Coastal Plain Pondshores are globally rare herbaceous communities of exposed pondshores with a distinct Coastal Plain flora. Water levels change with the water table, typically leaving an exposed shoreline in late summer where many rare species grow.

Plants

Two outstanding populations of Long-Beaked Bald-Sedge, a tiny, brownish plant Species of Special Concern, occur within the sandy shorelines of this Core Habitat. A very large and robust population of Wright's Panic-grass is also found here, along with several other smaller populations.

Invertebrates

Coastal Plain Ponds within this Core Habitat, including Flax, Run, Simmons, Clay, Grassy, Bakers, and Pine Ponds, as well as numerous smaller ponds and surrounding forest all provide habitat for rare dragonflies and damselflies. Species found here include the Comet Darner, the New England Bluet, and the Pine Barrens Bluet. All of these ponds are located within a large area of relatively undeveloped and unfragmented landscape, allowing for unimpeded dispersal of dragonflies, damselflies, and other invertebrate species. This Core Habitat is just to the west of Core Habitat in Brewster and Harwich, allowing additional dispersal between these two areas.

Living Waters: Species and Habitats

Brewster

Core Habitat LW053

Exemplary Habitats

Common Name	Scientific Name	Status
Lake/Pond Habitat		----------

Core Habitat LW280

Plants

Common Name	Scientific Name	Status
Resupinate Bladderwort	*Utricularia resupinata*	Threatened

Core Habitat LW344

Exemplary Habitats

Common Name	Scientific Name	Status
Lake/Pond Habitat		----------

Core Habitat LW346

Exemplary Habitats

Common Name	Scientific Name	Status
Lake/Pond Habitat		----------

Plants

Common Name	Scientific Name	Status
Acadian Quillwort	*Isoetes acadiensis*	Endangered

Core Habitat LW347

Exemplary Habitats

Common Name	Scientific Name	Status
Lake/Pond Habitat		----------

Core Habitat LW348

Exemplary Habitats

Common Name	Scientific Name	Status
Lake/Pond Habitat		----------

Living Waters: Core Habitat Summaries

Brewster

Core Habitat LW053

Ponds on the Atlantic Coastal Plain experience natural water level fluctuations and provide uncommon freshwater habitats for aquatic plants and insects with their acidic waters and sandy, cobble, or mucky pond bottoms. Rafe Pond is one of the few such ponds that has little or no development in its riparian areas and is removed from cranberry agriculture. While partially protected by conservation lands, the habitats within Rafe Pond may be threatened by development and water level drawdowns due to wells in the region.

Core Habitat LW280

One of only nine known populations of the rare Resupinate Bladderwort in the state inhabits the peaty margin of this Coastal Plain pond. This tiny plant is usually submerged underwater, and purple flowers are produced only when the habitat is exposed during periods of extremely low water. Bladderworts are carnivorous plants, trapping tiny aquatic animals in their pouch-like "bladders." Native freshwater plants like the Resupinate Bladderwort are an important component of aquatic communities, and warrant conservation attention if we are to maintain healthy freshwater ecosystems.

Core Habitat LW344

Ponds on the Atlantic Coastal Plain experience natural water level fluctuations and provide uncommon freshwater habitats for aquatic plants and insects with their acidic waters and sandy, cobble, or mucky pond bottoms. Higgins and Eel Ponds are examples of such ponds that have little or no development in their riparian areas and are removed from cranberry agriculture. Although protected within Nickerson State Forest, the habitats in Higgins and Eel Ponds may be threatened by water level drawdowns due to wells in the region.

Core Habitat LW346

Ponds on the Atlantic Coastal Plain experience natural water level fluctuations and provide uncommon freshwater habitats for aquatic plants and insects with their acidic waters and sandy, cobble, or mucky pond bottoms. Little Cliff Pond is one of the few such ponds that has little or no development in its riparian areas and is removed from cranberry agriculture. Its sandy pond bottom supports a population of the Endangered Acadian Quillwort, a primitive, submerged freshwater plant, which is so-named for its spiky, quill-like leaves rising from its base. Although protected within Nickerson State Forest, the habitats in Little Cliff Pond and its associated peripheral ponds may still be threatened by water level drawdowns due to wells in the region.

Core Habitat LW347

Ponds on the Atlantic Coastal Plain experience natural water level fluctuations and provide uncommon freshwater habitats for aquatic plants and insects with their acidic waters and sandy, cobble, or mucky pond bottoms. Cliff Pond is one of the few such ponds that has little or no development in its riparian areas and is removed from cranberry agriculture. Although protected within Nickerson State Forest, the habitats in Cliff Pond and its associated peripheral

ponds may still be threatened by water level drawdowns due to wells in the region.

Core Habitat LW348

Ponds on the Atlantic Coastal Plain experience natural water level fluctuations and provide uncommon freshwater habitats for aquatic plants and insects with their acidic waters and sandy, cobble, or mucky pond bottoms. Ruth Pond is one of the few such ponds that has little or no development in its riparian areas and is removed from cranberry agriculture. Although protected within Nickerson State Forest, the habitats in Ruth Pond and its associated peripheral pond may be threatened by water level drawdowns due to wells in the region.

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